

COST and MANAGEMENT

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COST AND MANAGEMENT

Industrial Research

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Farquharson, Goforth & Co., Montreal

(Before Montreal Chapter, February 18, 1932)

THIS paper has no purpose other than to perceive and try to understand, yet there are some errors so obstructive that one can only advance by definitely removing them from the path.

With regard to commercial "rationalization" in industry, there is no place in 1932 for illusion, its non-existence is everywhere too patent, and it is not that the industrial show is too large or too small, but that verily it is too large where it might be small.

The errors which are constantly made and successively repeated are largely due to the processes of unending growth and competition, which in turn will follow all our days, hence the gleanings of our experience force us to accept the fact that errors are not merely being stated by inference, but are definitely established.

There is apparently no limit for man to err, even as there are no absolute limits to apparent growth; we may not forestall either, but at least we may try to comprehend the common point where both meet and determine from the steps of the past, the direction in which we should look ahead. This is one aim of Industrial Research".

Introduction

By discovery we gain, even though sometimes it appears we lose, and though it is befittingly human to run off the track in our process of discovery, in our lassitude and physical inertia, such looseness in industry adversely affects so many people and reacts as a boomerang on all concerned, that leaders are coming to the conclusion that these vices are no longer to be more than reasonably tolerated.

Understand, that in attempting to define industrial growth or recession, we are speaking largely of MAN—of a social animal who has throughout a few short centuries evolved from his "tribal habitat" to his present nationalism and who will, according to some hopeful idiots like myself, probably change his present state within some future century into a brotherly internationalism, even as he today has made the province or state into the unity of nation.

The reference of man's relation to industry, of industry to nationalism—is bound up in available raw materials—in interrall transportation — in capital, the vehicle by which he may pronounce his apparent poverty or pre-eminence — in the activity wherein he co-ordinates these elements to bring about trade and commerce of the nation; but these are all dependent upon man himself — to the power of thought in which he places the forces of national and international movement in juxtaposition to his own provocative manipulation. We therefore see that commercial pre-eminence of man will mainly depend, under our present momentary system of operation, in the intelligence and characteristics of the masses — of their collective discernment under the fire of international exchanges and in the experience and wisdom of their leaders who use the machinery developed by the nation to further a national welfare.

Speaking of Canada — we have arrived, together with other countries who have us in potential wealth and commercial eminence, to a point which is directly related to our measured energy, national

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spirit and economic geography; and in so having dealt with ourselves, we are treading the self same paths which have tragically witnessed throughout history the rise and fall of nations, their economic prosperity, sustained warlike or peaceful tendencies and their ultimate dissolution or decline.

Within recent years the world has undergone remarkable and rapid changes. The redistribution of wealth, the balance of power, the redelineation of new political boundaries and the alliance of national favourites. In industry, the mechanical age, with its electricity, steam, telephone and telegraph, has fostered the development of complex and massive machinery, as well as surer and ever swifter means of transportation between peoples of the world. These in turn have given economic barriers, formerly stable by comparison, a movement and change which grants the knowledge that men's wants are insatiable and in the ultimate makes the problem of commercial endeavour a highly complex and involved problem for the manufacturer.

In the operations of commerce, the manufacturer has been forced to witness the development of newer methods and constrainedly to enforce the adoption of these practices, if he would survive the pressure which competition has so keenly passed along. These movements have become more widespread as time goes on, so it is that a growing sense of importance is being evinced toward "industrial research" in industry.

These latter words are thrown at the manufacturer with varied meanings. Just where the limits of industrial research precisely lie, none can tell. It is certain, however, that we generally conceive it to be the substitution of analysis, study and preconceived planning with direct reference to any branch of industrial activity as it may bear upon and affect, in particular, one organization. It is designed as a guide to supplement and counsel management in exploring the fitness of materials, the economical use of machines, the exactness of cost, the uses of new metals and processes, the wise division of labour and the measure of reward.

I propose in this address to first deal with several broad generalities concerning Canadian industries, so that we may bear down from this vantage point to discuss any details which may occur to you later, in the time set apart for discussion.

Physiographic Canada and Industrial Research

If we study the map of North America, there are immediately two marked features which have bearing upon the future trend and development of Canadian industry. Firstly, an imaginary line stretching some 3,000 miles across the continent separating the two countries, — secondly, the predominance of the Laurentian Upland Shield which forces in Mid-Western Canada the great "interior plain" into comparatively narrow limits against the Pacific Highland Region. (See Plates 1 and 2.)

This Laurentian Upland is of a totally different type of formation to the Interior Plain and due to the mineralization which occurs throughout, it creates a vital difference between Canada and the U. S. as national properties. In Plate 3, it will be noticed that two dotted lines have been drawn which parallel somewhat the U. S. — Canadian boundary. The lower lines represents the limits of northerly developments, which first begin at the border and extend upward to the line in question. The second purports to show the limits of territory which have been more or less covered geologically, the area above and northward of which remain practically unprospected at this date of writing.

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Perhaps the listener will readily agree that in the years to follow Canadian industry, the spread of her people and the succeeding waves of commercial activity, will be largely influenced by the continuous assimilation of these northern areas. We who sit in offices, have little concept of the wealth which those vast and astringently virile districts will offer in furnishing raw materials for hundreds of manufacturing uses and it is fairly probable that in greater measure these partly processed or completely manufactured products, emanating from these areas in the future, will find their market, overseas in competition with similar goods from other countries.

Below the border, by comparison, the U.S.A. have some one hundred and fifty years of intensive industrial development behind them, which finds expression today in numerous arterial railroads, highways, inland water routes, and in power developments and electrical distribution, to the extent that the intensification of industrial and manufacturing units are far greater than we may expect to have for years to come. This brings our attention to one point in connection with industrial research in Canada, viz:—Due to the preponderance of undeveloped areas, as compared with the settled districts—to the relatively small industrial development, as compared with what shall be—industrial research may be influenced in its future to the extent of discoveries which are yet to be made in the Canadian domain; so much so, that any company considering the installation of research facilities should design them so that while the present situation may be completely enveloped, one eye should be kept continually on the watch for new opportunities which are being constantly opened up as the years pass along.

Our passage in life and the change in conditions around us as individuals may seem slightly humdrum and slow, but in the age of companies, the spread of life is magnified and a correspondingly greater responsibility attaches to those who are held liable for the growth and success of established commerce.

If, then, research shall maintain any place in company budgets today, it must of course fulfill the continual pressing exigencies of current occasion. However, it will undoubtedly fail of its correct function, if all future plans and expansion are not constantly revolved in the light of changing growth and economic variance within the country of origin, of the new discoveries which may have granted foreign rivals a tentative economic advantage and in a consummate skill gained by manipulating the movements of commerce so as to focus them upon the operations of the organization in question.

The Economic Cycle Related To Industrial Research

A glance at Canadian economic activities reveals that Canadian commerce is continually in sympathy more or less with that of the rest of the world and fluctuates according to the well-known laws of "supply and demand". (Refer to Plate 4). These up and down movements on the economic curve are consistently reproduced over a period of years in some one or other form of periodic progression. So it happens that from time to time, for non-concurrent periods, variations in the economic condition within Canada cause restrictions in the arts of manufacturing and affected companies are forced to observe corresponding reductions in line with prevailing conditions in their territory.

It is pertinent to notice that during the periods of low activity on the economic curve, each country is bent upon improving the industrial conditions within its own boundaries. Tariff walls, a more or less recent innovation considering historical records, have been

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lately built up to save for each country many inherently valuable markets. This governmental intervention on behalf of industry has been brought to more pointed use and public attention in recent years and it is noticeable in connection with such tariff policies that a time will no doubt come when several countries, bounded by adequate ties of sentimental or economic attachments, will combine under some form of reciprocal agreement better to take hold and stabilize within their various boundaries the industry of the combined group.

The economic abnormalities and uncertainties precipitated by the world war are now largely historical. From the industrial viewpoint, the upheaval resolved itself into the drawing of a line of demarcation between the comparatively successful methods of that period and the increased productivity of the equipment and machinery provided in the present.

New discovery, whether it be in the realm of science or industry, may be the result of accident, but the improvements, applications and enlargements are a result of study and research. For instance, the discovery of glass may be in part truth stated as a cause of accident, but the development of a modern lens with its proper proportion of Silicate, Salt, its properties of curvature, deflection and polish are a result of study and research brought about by the combined needs of science and industry. Industrial research involving manufacturing production and control, with lowered costs in manufacturing process and the investigation of internal organization and management, with a view of directly assisting that management, are also instruments of use developed to meet present day requirements. It is to these that I wish more particularly to invite your attention later.

Throughout our daily world-wide and swift communication, changes of supply and demand are known in all quarters of this globe almost as soon as they occur in the various centers and the readjustment of prices in accordance are normally made without serious loss or disturbance to the many commercial and industrial institutions involved.

In ordinary business, the accepted offer of the lowest bidder becomes a foundation for prices of like quality and a minimum stable limit is reached for sales when further reduction is possible only at the sacrifice of profits which are the just demands of capital. In times of stress, however, additional sacrifices are made in order to keep the wheels moving and this in turn forces the uneconomical producers out of the picture.

Hence, then, the lowest market price for all the self-same articles is the pivot upon which the whole structure of modern cost control and industrial management methods are turning. Profit conception, which measures the safety of capital against the rewards earned by its use, is principally good or bad, according to how closely the manufacturing processes involved can recreate or approximate the cost estimate, as well as the conditions under which the goods were accepted for delivery on prior sale. Each competitor, and collectively all competitors, have set the price at which prior sale was effected and from the nature of modern business, the greater profits accrue to those who have the ability to command cheap capital and who consistently discover ways and means in manufacture, organization or control, to effect every possible saving which lies in the system.

To "effect every possible saving which lies in the system" is one of the key elements which forms the basis of Commercial and Industrial Research. It matters not whether the financial structure be the object of investigation, or some operation, or series of successive

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operations in which production estimates are controlled, or mill output and costs determined; all are accessory to the prime motive of "reduction", and under the present order of things, susceptible to change and improvement. The standards set up or operated under today will not necessarily be the best under competition and changes brought into particular industries tomorrow. One company, by an improvement, will tend to force another completely out of business, if the latter is not thoroughly given to wide-awake inquiry and research for improvement.

An instance of this, well-known to many, and which for illustration will bear repetition, concerns the manufacture of Indigo Dyes in Germany. India, previous to 1900, had approximately a million acres devoted to the growing of the Indigo plant. This herb, after being shipped to Germany, was treated in various ways to extract the fluid indigo, an important dye stuff used in the manufactured goods of the textile industry. The annual value of this crop in 1897 was some twenty million dollars, while in 1910 it was reduced to about three hundred thousand dollars—certainly a most drastic change! It is revealed that German chemists, after an expenditure of some three million dollars on research, finally succeeded in producing Indigo Dyes synthetically.

The effect on capital involved in acreage, machines and organization in India can be readily visualized upon casual examination and the effects are well appreciated when many similar instances occurring in this country are remembered.

There are definite indications that rayon has supplanted the pure silk industry in some of its phases and has in turn increased the field in which its products are covered, so that as a result of this widened range of activity the textile woollen field has been encroached upon with subsequent restriction on the sale of woollen goods in those articles or lines where rayon has found general favour.

We find the same tendency between aluminum and steel. Through the results of metallurgical research on the former metal, new alloys, involving aluminum as the basic metal, have been evolved with the characteristic somewhat similar to that of steel, but with the added advantage of possessing one-third weight for equivalent strength. The results of these recent developments in this field have undoubtedly produced the cutting off of certain markets to the steel industry which were formerly held inviolate. For instance, aluminum is being employed in the shipbuilding industry with the consequent saving in weight and increasing the relative speed of the vessel for the same horse power installation. Again, in structural work, where weight is an important consideration, material of aluminum alloy with properties of resistance to tensile and compressive stresses, equivalent to that of mild steel, can now be had in various sizes. With the increasing facilities now afforded, there is no doubt that the future will show many increased uses for aluminum alloys in their more developed forms.

As a result of the shifting and the changes which are thus coming about in all industrial activities, each individual company is faced in a particular sense with 'changing markets', with the new developments which science has created in those markets, with the changes in purchasing power of the unit buyer and in the mental reaction of the purchases to products which in prior days would have been in advance of requirements, and again, in the future will lack the essential style and quality of design, which will in turn "belong to that future".

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More definite results of new product research comes from the West, in the canning and fishing industry. Formerly many hundreds of thousands of fish were wasted each year as a result of quality requirements in the canning industry. As a result of research, a means was found of converting these unsaleable fish into fertilizer particularly rich in phosphates.

Meanwhile commercial methods of development had been devised so that now we find a new industry has arisen in Western Canada, employing approximately some \$3,500,000.00 of capital, involving five companies, which in the aggregate employ some 2,500 employees. This development in turn has brought similar activities in the Maritimes and comparable industries are at present operating, or in the process of being operated, to take care of the waste which formerly obtained there.

Similar research has developed recently (for the Prairie Provinces) a new product from the wasted straw of the thrashing machine and the likelihood is that commercial production of this new material will add still another plume to the useful work which research has given in its many and varied forms to industry.

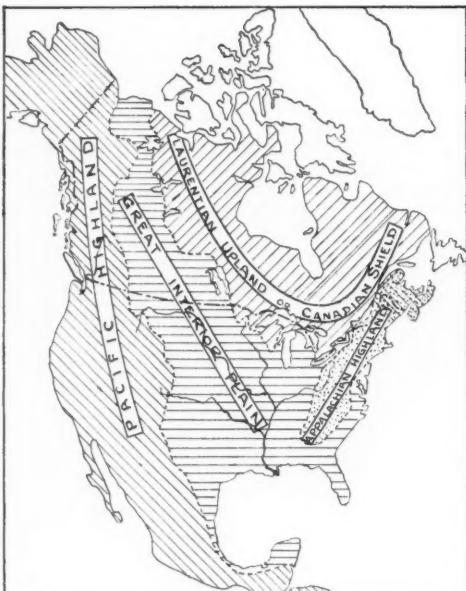
It is not my present purpose to recite the many past cases wherein industrial research has played an important part, but as I mentioned before, to offer a general view of certain broad aspects of the Canadian field, as it will no doubt apply to some of us who are in one way or another carrying forward this work in industry.

To the manufacturer, research generally means saving—in money or kind, and in the case of Indigo, it will be remembered that a gain to the Germans meant a loss to India, so from the point of view of the Indian manufacturer, research, in addition to pointing out the swing of the pendulum, should have supplanted the loss in volume by some other material suited to the acreage and machinery employed. By this means, losses would have been turned in another direction, hopefully towards profit, and in the unending movement of commerce, we see that for each new product made by one company, which lessens in some way the demand of another's, both a profit as well as a loss are collectively sustained. However, if the right balance is maintained in the activities of each organization through the medium of research, there will be no permanent loss and each company will merely fulfill the requirements of the day by day changes and variations, which are those imposed by all commercial activity. Again, since in the established round of day by day operation in industry these variations continually follow one another in the process of company life, it follows that he who on the average can recreate new products, develop new methods in manufacture or merchandising and can maintain lower costs for equivalent quality, must possess on the average the favour of profitable operation. Similarly, he who betters this average in this respect, must have a decided advantage on "better than average profits".

The motion is a circle which brings us back to our starting point all over again; the only difference is that we have in the meantime set ourselves a higher margin or standard from which to take the next lap.

The problem facing those engaged in "industrial research" is plainly one which may neither be entirely or satisfactorily solved. In times of prosperity, when faced with the opportunity of carrying out investigations concerning the development of new products, the technique of new manufacturing methods, more efficient distribution

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MAP SHOWING CONTRAST
BETWEEN
CANADA & U.S.A.
PHYSIOGRAPHIC DIVISIONS

PLATE I.
TO ACCOMPANY
PAPER ON "INDUSTRIAL RESEARCH"
By S. FARQUHARSON.
"From Natl Res. Inst. Service, Ottawa."

and marketing, etc., a client will say—"There! Look at our balance sheet! Could any business man expect to have a better or more substantial position than ours today? We do not need industrial research—our spirit was conceived without it, our growth has precluded its usefulness, our organization was built in ignorance of it and if it has thus played no part in what has preceded, how shall we admit its necessity in the future, or gauge the basis of its effectiveness in the present?"

Surprising as it may seem, there is no absolute measure of effectiveness to research and there is no definite gauge of necessity; yet heretofore, the conception and growth of industry has conscious-

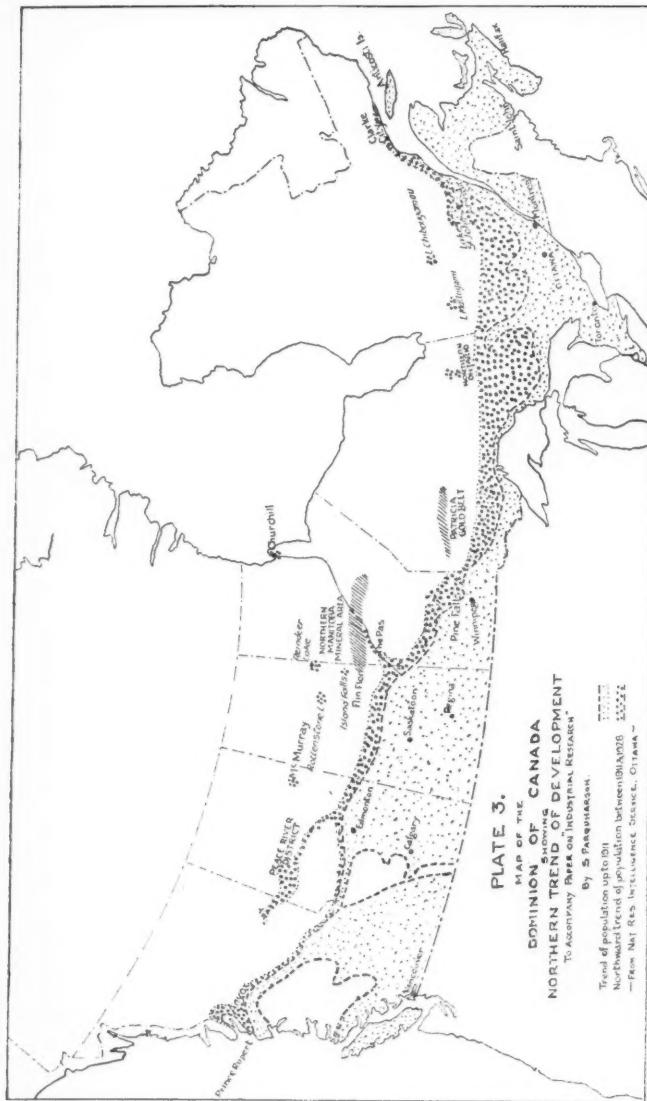
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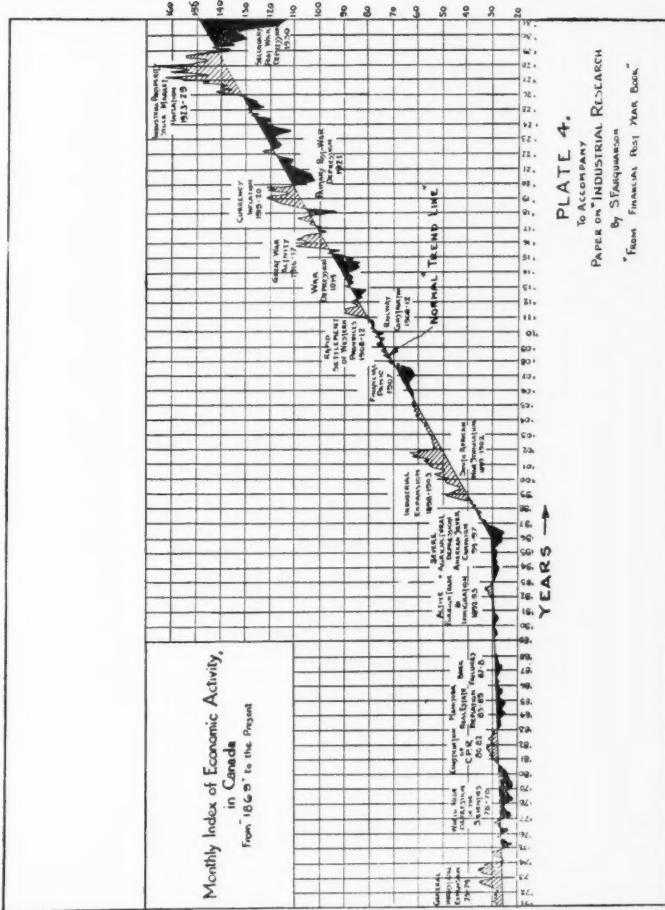
ly or unconsciously been based upon its adaptation in one instance or another to the demands of market, the discoveries of science, and the opportune and timely combination of capital, labour and material.

The dilemma of "a standard of research effectiveness" has not yet been solved. Perhaps it will be one of those future accomplishments which an insatiable mechanical and material age will chance to place a knowing digit upon, but meanwhile, our only recourse is to the judgment of men leading every form of endeavour, who have made statements to the manufacturer that to those who would be successful—who would stay in business—who would hold what had been de-

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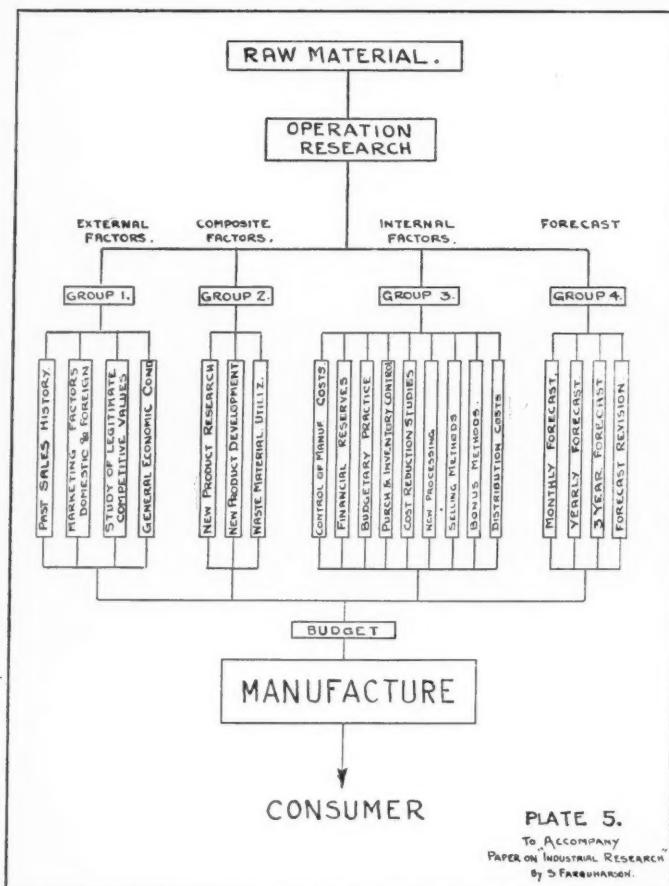


veloped and grow with the future, research is not a matter of choice! It is not a thing to do in good times or bad, but is an essential part of any organization, industrial or commercial in character. Industry created it in recent past and competition has forced it as definitely into the "operation cost" of manufacture, as style changes or Advertising.

The Four Principal Elements of Research (Commercial)

Let us now run over briefly the four main divisions of research in manufacture. They are:—1.) external factors; 2.) composite fac-

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tors, (coming from numbers 1 and 3); 3.) internal factors; 4.) forecasting. Each one of these factors interlocks with the other and the dividing line as to where one leaves off and the other one begins is never clearly defined. Taking these up in order named we have:

1. External Factors (group 1, Plate 5).

Elements in the industrial situation which continually provoke serious thought are high wages, rising material costs, rigid quality standards, reduction in the size of orders, increasing competition, increasing taxation, wider scope and greater productivity from ma-

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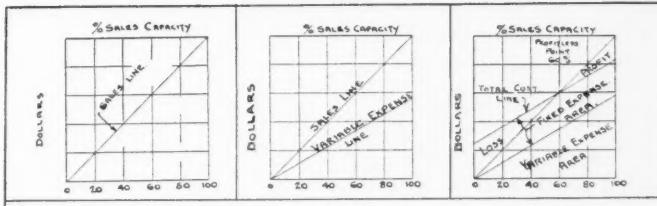


FIG. 1.

SHOWING CONSTRUCTION OF DIAGRAM.

FIG. 3

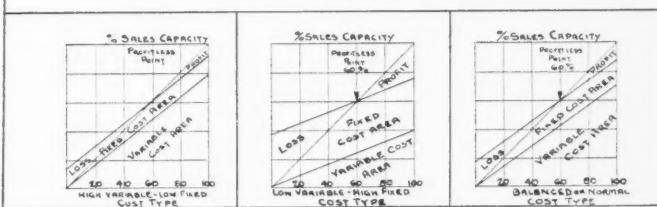


FIG. 4.

SHOWING 3 DIFFERENT TYPES

FIG. 6

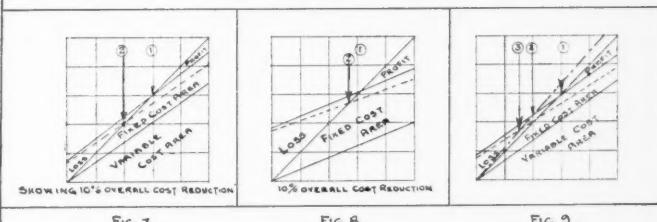


FIG. 7

FIG. 8.

FIG. 9.

SHOWING RELATIVE EFFECT OF COST REDUCTION.

NOTE:- FIG. 8 SHOWS CHANGE IN SALES LINE RESULTING FROM NEW PRODUCT DEVELOPMENT OF MATERIALS (IF ANY) WASTED IN THE PROCESS OF MANUFACTURE.

① PROFITLESS POINT

② " " WITH COST REDUCTION

③ " " " " NEW PROD DEVELOPMENT?

PLATE VI.
TO ACCOMPANY PAPER
ON
"INDUSTRIAL RESEARCH"
By S. FARGHNAKHN.

chinery, with the increased hazard in business generally, which results from narrower profit margins.

During the 1921-30 period we have from a general knowledge observed that the risks of doing business have measurably increased. Some of the main reasons are:

1. Higher fixed charges,
2. Style changes,
3. Producers carrying inventory burdens formally held by distributors and others,
4. Technical obsolescence,
5. Hand to mouth buying on the part of the public,

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and that while production operates on the "economic law of diminishing returns", the unit cost of distribution and sale for a given area increases with the volume.

Few business men will disagree with Donaldson Brown's statement that a "theoretically perfect co-ordination of business comprehends an exact knowledge in advance of **what** the public wants (within limits of given ability to supply), an exact knowledge of **how much** the public wants (with limits of human ability to purchase and consume) and a regulation of production to fit these ultimate consumers' demands for kind, quality and quantity.

If we could know these elements and devise some means of measuring consumer demand with sufficient accuracy to set up production schedules and corresponding inventory control, we should have mastered a portion of our present industrial malady. For, remember, it distinctly purports to measure in advance."

This forecasting or measuring for production must seem to bear earnest consideration and will in turn depend for its accuracy upon several types of study, namely:

1. Study of past sales history
2. Study of marketing factors (domestic and overseas)
3. Study of legitimate competitive values.
4. Study of general economic conditions by a "keynote" from a specific industry
5. Study of world trends and foreign economic movements and it would seem logical to conclude from the swollen production schedules of 1929 and the bankrupt retail stocks of 1931 that manufacturers by and large have failed to adopt adequate means to determine what the public wants, either in kind, quality or quantity.

From the above, it will be seen that there is a distinct and definite field for forecasting the "economic trend" as applied to the kind and degree of manufacturing and the number of units to be sold, as well as research on marketing and distribution methods by correlating all those external factors which decidedly influence and are of paramount importance to manufacturing and sale at profitable margins of cost.

2. Internal Factors (Group III. Plate 5.)

There seems to be but one thing which will enable a business to tune in accurately on the concurrent movements which are included in those of operation. This is the BUDGET. It is essentially a plan of affairs which will project the "desirable performance of income over outgo" and at all times become a measure to which the actual performance can be related. Its compilation depends upon the sensible experience and considered judgment of the controller in the light of foregoing studies, and without it, operations must fail of having a definite standard to attain.

May I, at this point, take the opportunity of referring you to the wealth of literature touching upon matters concerning budgetary and other types of control method in industry. You might care to refresh your memory upon these by re-reading two excellent local papers recently presented before this Society by L. N. Buzzell on The Installation of Cost Systems and E. S. Larose on Budgetary Control.

It is not the intention of this paper to take up the development of a progressive budget, the creation of proper budget machinery or its current control, but there are one or two factors worthy of treatment concerning business which I have tried to depict on Plate number 6. You will see that figures numbers 1, 2 and 3 outline and trace the development of the succeeding diagrams; (for more complete dis-

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cussion see also Knoeppe in *Factory and Industrial Management* for September 1931); figures 4, 5 and 6 show three basic forms from which one may find in turn all types of superimposed variations, while figures 7, 8 and 9 illustrate the effect of cost reduction on both variable and fixed costs in the three preceding cases.

The charts are made up of three lines:—First—total sales line; Second—fixed costs line; Third—the variable costs line. Fixed costs include, besides those costs which are stable from year to year, certain fixed-variable costs necessary to maintain the minimum organization as a going concern, without reference to the rise and fall in business volume. Beyond this point are the variable costs, which among others, include salesmen's commissions, direct and indirect labour and materials, etc., etc., which all move according to the volume.

From a consideration of the various diagrams, it will be noticed that the "profit-less point" will tend to move up or down, as the total costs increase or decrease (according to the volume). Directly at the "point itself", costs are made up of variable and fixed costs only,—at any succeeding point where there is a greater volume, costs being made up of these two elements plus one other variable—Profit, (or loss, depending on which side taken), so that while the variable costs in any given case remain a stable percentage of the sales dollar, fixed costs and profit (or loss) vary in percentage to make up the balance of the sales dollar totals.

By presenting these charts, it is hoped that the reader will be able to see for himself several interesting points following on from the brief description which has been given here. For instance, assuming a budget fixed for one case at 80% sales capacity, visualize the changes which will occur in the budget going up to 100% and again down to 60% capacity.

As one of the main users, if not also one of the originators of this graphic method of depicting operations, Knoepple has added a development which may one day become almost general in its application to planned industrial enterprise. The interested reader is again referred to his written work on this subject.

Carrying on with the remainder of Plate No. 5, we still have to consider composite factors and forecasting.

Composite Factors (Groups 2 and 4 of Plate No. 5.)

In many cases new product development is carried out under what we may call "special staff facilities". In view of this, as well as the fact that the new product development must concern itself frequently with the development of lines entirely out of, although kindred to the manufacturing routine, I have felt that it should take a place of its own on this chart. In other respects the diagram is self-explanatory and needs little comment.

As stated previously, there is no definite line separating one particular group of activity from another and since forecasting has already been touched upon under EXTERNAL FACTORS, I merely propose to add a statement made by Carle M. Begelow concerning the value of forecasting and knowledge of external influences to the directing executives of a company.

Three conclusions have been reached after a long experience in industry as follows:—

1. That the success or failure of a man engaged in business de-

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pends more upon his skill as a prophet than upon his ability as an executive.

2. That external conditions exercise a more potent influence on profit making than do the internal conditions.
3. That the gains resulting from the ability to foresee future trends and to provide against them exceed the marginal profit that comes from competitive business."

Lastly, I want to draw your notice to the structure of companies as they merit attention from the research practitioner. They are not listed in any preferential order, because circumstances are so varied that each case will differ from another.

Division in Typical Manufacturing Organization

Generally speaking, any company may be divided into four interlocking units which are group classified under the "Internal Factors" previously outlined. It does not essentially matter whether the company considered be employed in the manufacture of footwear, woodworking and furniture making, aluminum, steel or metal products, or again in the manufacture (or generation) of electric power; essentially these four units can be well fitted in to depict the aggregate group activities of administration. There elements are:—

1. The engineering and design of the product.
2. The manufacturing or conversion of raw material into finished products.
3. The financial and cost control necessary to operate the business.
4. The distribution and sale of the products.

You will notice in connection with these four items that they recite the full scope of a company's activities and include the work handled by engineers, accountants and economists. The fourth member of operating aggregation consists of the BUSINESS MAN, who at some time or another generally has either one or all three acting as counsel to him.

This is more especially true of the larger corporations and let it be understood that in connection with the professions, we are speaking of them in their widest terms. For instance, in a manufacturing chemical organization, the technical control of the products and undoubtedly some of the material movements and production scheduling may be under the control of an executive chemist. We have spoken of him as an engineer, and it is in this vein that I draw attention to all divisions in their "widest terms".

In the smaller companies, departmental authority is frequently combined and brought under one or two key men, in turn responsible to the managing director or owner-president of the company. In these cases, it has been observed that constant contact with operating problems leave these men but little time in gaining a background of commercial movement and methods, which is vitally necessary to co-ordinated operation and future expansion.

This concentration on operation leaves no time to carry on studies required to truly anticipate and measure commercial movements which have had, in the past, prime effect upon their business. The failure to understand and be familiar with economic conditions, competitive values and all "external factors" facing an enterprise, is the barrier upon which more than one otherwise successful company has fouled. If these executives in the outlying plants could have weekly or monthly presentation of turn-over ratios, profit ratios as to plant

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performance, as to the fulfillment of sales quotas, as well as the proportion of current overseas to current domestic trade and other information, which if properly compiled, paints a picture for the executive about a business which is particularly vivid and vitally necessary, I feel certain that at least a few of the uncharted ships floating on the seas of commerce would be safely guided home by the man at the helm.

It is well known that commercial research, as evinced in new product development, cost reduction programs, etc., and by forecasting and budgetary control methods on production and sale,, have been held before the manufacturer for the greater part of a decade. Some firms who have held inviolate the spirit, as well as the letter of research, have made these instruments valuable tools in their hands.

Right or wrong, industry has yet to attain a basis for co-ordinated planning and it seems to me the place to begin is with the individual. Group industrial planning, or "rationalization" must surely fail, while the individual who is so obviously concerned lacks comprehension of the material benefits which, as an individual, he foreswore in the hope that the future might bring "a stable profit regularly earned" by some form of cordial or necessary combine.

It is held then, that research should be used to greater advantage by industry. Of course, while in the opinion of industrial leaders research is necessary, it also costs money and this, probably, together with the fact that business men may have been sometimes fooled in the past by improvident or incomplete researches, as well as their tendency to lack knowledge of its fundamentals, tends to make them, more often than not, somewhat skeptical as to its practical value. This will change in time and I am sure that through the closer co-operation brought about by the business man and research practitioner being constantly together in the work of research, a clearer understanding both as to its application and practicability will ensue.

Conclusion

I may not conclude this address without reference to two matters which will possess a very definite interest for Canadian industry. For the first, I must ask you to recall my earlier remarks made in connection with the physical structure and geography of Canada.

If you care to take time, as well as remember your world geography, there is a country on this globe wherein a colossal experiment is being tentatively enacted in social and national administration of industry and commerce. I refer to the U. S. S. R. and the country embraced under that jurisdiction in Russia and Siberia.

Your imagination will not be far unleashed before it is realized that here is a territory which duplicates Canada in climate, gold, oil, farming, lumber, power and nearly any one of the natural resources off chance mentioned. A five year plan is being carried out in that country, which is the predecessor of others designed to revolutionize the industrial strength of the nation and thereby capture an increased portion of world commerce. No one can rightly judge of the ultimate success of the scheme, because there are factors too precarious and involved for any but time alone to solve, albeit that European nations, including Britain, have already signified their willingness to trade with Russia on terms of fair competition in the open market.

If the Russian nationalistic scheme becomes a success as planned —if the five year plan is nurtured, and succeeding ones are built

COST AND MANAGEMENT

upon the early foundation, Canada, together with other nations, must inevitably be prepared to face in overseas markets, if not also in domestic, the competition which such success will ultimately give to the U. S. S. R. in the realm of world trade! Moreover, the fact that by geographical duplication Canada will likely be the greatest affected, makes the outcome of more than passing interest to appraise and evaluate.

There is no gainsaying the fact that many of our industrial leaders are well aware of the peculiar circumstances which might ultimately place a keen and ambitious rival in a position to compete on equal terms for world markets and it behooves the Canadian producer to set his house in order, to prepare and meet that competition, if, as and when it should arise.

Should it not come, the work will still be of definite value, for the manufacturer will none the less be in a better position to attain that goal which has been admitted and pressed upon us in the current industrial literature of the day and in the expression of our industrial leaders as the ultimate aim for the future of Canadian industry.

My second point refers to the Governmental Departments at Ottawa—the many Foundations and companies who are devoting themselves to research in their respective fields. I mention particularly the National Development Bureau, The Commercial Intelligence Service, the data available at the Bureau of Statistics and others such as the Ontario Research Foundation, the Pulp and Paper Institute and many more, too numerous to specifically name.

Undoubtedly there is much to be accomplished in the future of these organizations and the funds available are hopelessly inadequate to do that which is already planned, however, still the work goes on and in this connection I feel sure that this Society will play its part by aiding the manufacturer in proper methods of cost control to secure that desirable element of business—"adequate profits regularly earned."

Inventory Control

BY R. DAWSON

The Hoover Company Ltd., Hamilton

(Before Hamilton Chapter, October 29, 1931, and before Central Ontario Chapter, January 20, 1932).

First of all let me say that my talk this evening is not to be looked upon as a theoretical address on Inventory Control but rather as a more or less practical talk with a view to bringing up a discussion on a subject in which I believe we are all vitally interested.

INVENTORY CONTROL

For the purpose of this talk, Inventory Control may be divided into three classifications.

1st. Control as it affects stock on hand and available for production with a view to keeping up to production requirements without going under the minimum or over the maximum.

2nd. Control as it affects quantities of material and parts in stock in order that these quantities may at all times agree with book records.

3rd. Control of work in process.

Control for Production Requirements

Let us then review the first classification, that of controlling stocks for production requirements.

The aim at all times should be to keep up with production requirements in order that the work may flow evenly through the factory and that the production of finished units may be kept to schedule without raw materials and parts required being carried to excess or, the other extreme, that of working from hand to mouth with assembly Departments waiting for parts before they are manufactured.

Most plants will set up a production schedule which may continue for some time, or which, on the other hand may be subject to more or less continued change but, in the main, plant executives will strive for an even production schedule. Many plants maintain either a planning dept. or some authoritative person who may be designated as the chief planner. The duty of this planner is of course to maintain stocks available for production in sufficient quantities so that at all times the production schedule of completed units may be maintained without difficulty. On the other hand it is important, especially in these times of depression and falling values that the inventory be not too large so as to cause an excessive investment in inventories and to strike a happy medium will naturally be the aim of the person responsible. All this of course will be conceded.

Let us take an industry with several departments such as foundry, machine, finishing and assembly departments. The product may be a machine of some kind where many parts are necessary. Some of these parts are purchased, others are manufactured by the plant, while some others are purchased in the rough. Thus raw materials, rough parts and finished parts are stocked in addition of course to the finished units. The planner will know the parts required and in what quantities per unit they are required. In addition he should also know exactly what quantities are in stock and available in other ways. In order to assist him in this latter matter a form may be drawn up and what is known as a stock or shortage report will be compiled by the stores departments at the end of each month.

In addition some form of Planning Record should be set up and it may assist us at this time to study the form of Planning Record suggested.

COST AND MANAGEMENT

EXHIBIT A.

RAW MATERIAL REQUIRED FOR 100 PIECES														
QUAN.	UNIT	DESCRIPTION	QUAN.	UNIT	DESCRIPTION									
PRODUCTION PLANNING RECORD														
Sequ- ence	Dept.	Oper.	Part	Pcs.	Description	Sequ- ence	Dept.	Oper.	Part	Pcs.	Description			
								number nickel plating area automatic hourly production						
<u>PART OF</u> <u>SUB. ASSEMBLY</u>								model	part no.	part name	quantity per 100 machines	standard size	lot	material

EXHIBIT A. (Reverse Side)

THE HOOVER COMPANY LIMITED

Jan.	_____
Feb.	_____
Mar.	_____
Apr.	_____
May	_____
June	_____
July	_____
Aug.	_____
Sept.	_____
Oct.	_____
Nov.	_____
Dec.	_____

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

PRODUCTION SCHEDULE — LOTS TO BE ISSUED

This record is a card index with both sides of the card available for information. It is used on a Brooks Visible Index and, as will be seen contains a mine of useful information. On the one side almost every bit of manufacturing information necessary to the planner is shown while on the other side the actual planning record is set up. The card is divided into spaces by months and days and the planner will set up on this card the dates on which certain orders or lots of this particular part are to be handed to the plant to be manufactured or, in the case of parts rough or semi-finished, the dates on which orders are to be issued to the plant to finish these parts. For the purpose of manufacture parts are issued or raw material is issued in given quantities. It will be more economical to manufacture or finish more parts of one kind than another and so lot quantities for the different parts are set up.

With the lot quantities or quantity to order set up for each part, the planner can then set up his planning record in order that on given dates these orders will be issued to the factory and the planning record card will be marked accordingly. Thus a glance at these cards each day will show the planner what orders or lots will be issued to the factory the next day.

In this manner a constant flow of work to the factory is kept up with the parts being manufactured or finished as the case may be and coming back to the stores finished and ready for assembly into the finished units. If the work has been planned correctly there should be no shortages except possibly owing to the breakdown of some particular machine or mistake in the plant and in such cases a short-

INVENTORY CONTROL

age will not immediately result for the reason that the planning will not merely provide a bare sufficiency for production purpose but will allow for contingencies.

I have referred to the fact that some parts are purchased both in the rough and also finished and it will be seen that the planning record will hardly take care of the purchase of these items for the reason that different conditions are in vogue here. There is the matter of delivery and also of quantity. For this purpose the shortage or stock report is used, in addition of course to the regular ordering or parts down close to the minimum by the stores department. The stock or shortage report serves other purposes but let us examine this form and see how it will help the planner.

EXHIBIT B.

STOCK OR SHORTAGE REPORT

Material	MONTH ENDING							
	Models 2425 1541	In Stock	In Process	Will Make	On Order	Total Avail.		
	425	750	D.T.	D.T.	Service	#1	#2	

We find it shows spaces for the part or drawing no., description of part or material, model required for. And under these headings is shown the quantity required per unit, no. in stock both in rough and finished stores, quantity in process, will make, which means how many units the parts either in stock or in process will make, quantity on order and total available. Thus this report will show at a glance a true picture of the state of the stock room and its contents. It will check up on any possible shortages due to errors in ordering both from the factory and outside vendors. This report has other uses of which more will be heard later but it has a distinct place in the planning records.

In addition to the planning record and the shortage report there is another matter which it will be well to mention at this time. When orders or lots are issued to the Factory a record is made in what is known as the production progress ledger which is just what its name implies. A sheet in this ledger is set up for each part on which work is performed in the factory and whenever a lot or order for this part is issued to the plant a record is made on the particular sheet concerned. Each lot or order is numbered consecutively and the number is placed on the lot or order book which is issued with each lot to the factory. So much for the planning end.

Next we will take up the matter of keeping stocks on hand in thorough agreement with the stock ledgers and the stock cards. Everyone knows that stores leaks are a constant source of worry and no business can be said to be entirely free from the necessity for some form of control in this connection. The many and varied and often puzzling leaks play havoc with an executive's patience and very often with his P & L at the end of the financial year. Most storekeeping systems call for bin cards or stock cards kept in the stock room, on which cards is shown the part or drawing number, description of part, date, quantity received, quantity issued and balance to date. The cost department has a counterpart to these cards in the shape of stores ledgers on which the same information plus unit price and total value of parts in stock is shown.

Parts are received into stores with a record of some kind. If manufactured in the plant, a move to stores order is the record.

COST AND MANAGEMENT

EXHIBIT C.

MOVE ORDER—TO STORES ONLY THE HOOVER COMPANY LIMITED

From Dept	To Storeroom Number	Quality and Quantity O.K.		Lot Number
1	2	3	Inspector	
Quantity	Part No.	Part Name		
4	5	6		
Date received	Description and count O.K.		Entered—Stores Ledger	
7	Signed	8	Storekeeper	9

INSTRUCTIONS

Department foreman will fill in spaces 1, 4, 5 and 6
 Inspector will fill in spaces 2 and 3 after final inspection
 Storeskeeper will not accept material until move order is signed by inspector
 Storeskeeper will check description and count. Fill in spaces 7 and 8 and return this order to factory office.

If purchased from an outside vendor, a receiving slip is the usual record for the stores department with the addition of a corresponding invoice for the cost department.

The move orders or receiving slips are entered on the stock cards and forwarded to the cost department for entry into the stock ledgers together with the value of the parts both unit and total. If a standard cost system is maintained this is a simple matter but if not then extreme care must be taken so that the parts will be taken out of stores at the same price as charged to stores originally. Parts being issued will not be issued unless a requisition is presented calling for the part number, part name and quantity required. The parts are issued, the requisition is entered on the stock cards and forwarded to the cost department for entry into the stock ledgers. So far so good. All parts received have been entered into both cards and ledgers and all parts issued have been dealt with likewise.

The totals or quantities of parts shown on the stock cards should agree with the totals shown on the stock ledger sheets and both should agree with the actual totals in stock. But do they? Not always. The human element creeps in and there are errors. Errors many or few, large or small, but still errors. How then to discover these errors and to rectify them?

It is essential that, first of all the stores dept. should be instructed neither to receive or issue any parts unless they receive a record at the same time that parts are received or issued. Many times parts are either received or issued with the promise of a record later. This should not be tolerated for very often the promise is forgotten and memory is a very fitful jade to rely upon. Parts being received into Stores should have the quantity checked to see that this agrees with the receiving slip or move to stores order and similarly the quantity issued should agree with the requisition.

A few simple rules, rigidly adhered to will work wonders in carrying out this work because any errors will soon be detected. First of all, we have already referred to the stock or shortage report issued monthly. This report, as we have seen, shows the total quantity in stores at the end of the month and so far as this angle is concerned, is an exact replica of the stock card. This stock report

INVENTORY CONTROL

can be used as a rapid check on totals in the stock ledger and any totals which differ should be investigated immediately. A perusal of the individual entries on both cards and ledger sheets will soon show where the error is and it can be rectified immediately. An added check is to have completed stock cards forwarded to the cost department when they are completed and for the department to check the corresponding sheet in the ledger for any difference in totals. Together these checks will prevent differences between stock cards and ledger sheets. But still we have possible differences between actual stock and the records.

One of the best methods of determining such differences is the Balance on Hand Card system.

EXHIBIT D.

BALANCE ON HAND

To	Stock Room No.	Date	Counted by	
Description	Part number	Actual Quantity	Date Counted	Time of Count
On Hand				
Ledger Balance			Counted By	
Difference			Storeskeeper	
Stock Room	Quantity	Price	Per	Amount
Short	Ledger Adjusted By	Debit Acc't No.	Credit Acc't No.	Inventory
Stock Room	Quantity	Price	Per	Amount
Over	Ledger Adjusted By	Debit Acc't No.	Credit Acc't No.	Inventory

Instructions to storeskeepers: 1—Gather all filled requisitions and pin to this card.
2—Make careful count of stock and fill in quantity, date and time, then sign.

3—Send this card and filled requisitions to Stores Ledger Clerk Dep't

The balance on hand card is a simple card, showing the part number, part name, actual quantity on hand, date of count and other information to show the ledger balance, cost and differences. These cards are issued daily to the various stores in such quantities as will cover the entire stock at least three times annually. When the stores department receive the cards they take a physical count of the part designated on the balance on hand card and record the actual count on the card. This card is usually taken at the close of the day's business and is promptly returned to the cost department who compare the count with that shown on the ledger. If there is any difference the adjustment is made on both stock cards and ledger and the value of the difference either charged or credited to its correct account. Thus the balance on hand card acts as either a requisition or a receiving slip and by this method a very efficient check can be made on quantities in stock as compared with the records while the system of checking previously outlined will rectify any errors which may creep into the records.

How efficient these methods are when lived up to can be more readily understood when I say that our own company last year succeeded in whittling down the actual difference between actual and book inventories to a mere 3/10 of 1%.

COST AND MANAGEMENT

The next item we consider is work in process control. The work in process account unless carefully watched is apt to become a dumping ground for every item which the cost accountant finds difficulty in charging. The account is a difficult one to control, especially where material, labor and burden is charged in bulk to this account without regard to any particular order. Where a job order system is in vogue it is not so difficult because in that case the charges are made to a particular order and are entered on a separate cost sheet for each order. It is therefore a simple matter for the cost accountant to check up on these orders and to readily see if the correct amount of material, labor and burden is charged to the order. Not so with other systems. Take a standard cost system. A standard of material, labor and burden is set for each unit or part and when parts are finished, work in process is credited and Inventory is charged with the total of these standard. But have these standard

EXHIBIT E.

MATERIAL ORDER

No.

To storeskeeper—Deliver the following:
To.....Dep.

FOR ONE ITEM ONLY.

Quantity	Unit	Material	Unit Price	Amount
----------	------	----------	------------	--------

Date Delivered From Storeroom No. Storeskeeper

From Storeroom No.

Storeskeeper

Charge

Credit

Entered—Stores Ledger

In process
Account No. Account No.

been correctly charged to the work in process account? Material has been charged at the standard cost but the cost accountant must be quite sure that his standards of material as regards quantities are correct. His labor has been charged at standard and in this case any variations are taken care of by means of his variation charges while his burden is based on standard hours and is virtually correct. Care should be taken so that nothing is charged into the account which does not come out with the cost of the completed part or unit.

We have already heard of the lot or order books which accompany all lots to the factory. These lots are numbered so that they can be kept track of and comprise, first, a material order or requisition which is the authority of the stores department to issue the material designated on the requisition. When this is done the material order or requisition is detached and retained by the stores department for entry on their stock cards and then to be forwarded to the cost dept.

Next is a move order which is the authority of the stores trucker to move the material or parts to the department designated on the move order. When this is done the foreman of that department signs and detaches the move order which is placed in a box in his department and later collected by the stores department.

INVENTORY CONTROL

EXHIBIT F.

MOVE ORDER

Date Moved	Quantity	Part Number	Lot Number
Move to			
Department Record			
Date Rec'd	Foreman		

When this ticket shows on truck, move truck to department as shown and hand this ticket to foreman to notify him that the truck is in his department.

Next is a lot ticket which is the authority for the foreman to have the work done in his department. On this lot ticket is marked the operations performed as they are done and the dates in which these operations are performed and the quantity. The number either rejected or scrapped is also designated on this card and the reason given incode. When the work in one department is completed the lot ticket is detached and deposited in the box previously referred to.

EXHIBIT G.

LOT TICKET

Hoover Form		Department		Lot No.	Part No.
Date In	Operation	Quantity	Inspectors	Count	Rejections
Date Man No.	No.	Worked	Passed	Scrap	Salvage
Date Out				Dism'tled	Quantity & Cause
Totals					Inspector

KEEP TICKET WITH WORK UNTIL INSPECTED

EXHIBIT G. (Reverse Side.)

All deductions for re-operations and spoilage will be figured on the piece rate basis

CAUSES FOR REJECTIONS	
A Re-Grinding	AA Re-Spray
B Re-Roughing	BB Re-Sand
C Re-Fining	CC Re-Dip
D Plugging	DD Soiled-Handling
E Welds	EE
F Dirty	FF
G Ground Thru	GG Open
H Cracked Walls	HH Short
I Pin Holes	II Grounded
J Blows	JJ Small Bearings
K Defective Casting	KK Loose Bars
L Broken in Handling	LL Bad Slots
M Broken in Chipping	MM Bad Leads
N Bad Nickeling	NN Automatics
O Corners not Rounded	OO Bad Winding
P Cut Too Deep-Saws	PP Slot Cell Missing
Q Bad Milling	QQ Resistance Test-High
R Bad Drilling	RR Resistance Test-Low
S Bad Tapping	SS Bad Paraffine
T Bad Slotting	TT Bad Connecting
U Bad Filling	UU Bad Polishing
V Bad Filing	VV Bad Paint
W Bad Machining	WW Bad Assembly
X Bad Balance	XX Bad Solder
Y Not True	YY Bad Reaming
Z Bushing in Wrong	ZZ Bad Turning

REPORT CAUSES BY LETTER

COST AND MANAGEMENT

Next comes another move order to move the parts to the next dept. and the same procedure is followed as in the first department with the move order being signed, detached and deposited in the box. These move orders are collected by the stores department daily and entered in the progress ledger, thus showing in what dept. any lot is at any particular time. This procedure is followed until the order is completed when it is sent to stores accompanied by a move order to stores which is entered on the stores stock cards and the fact that the order is completed is recorded in the progress ledger also. In this manner complete track is kept of all lots or orders going through the plant and anyone looking at the progress ledger can see at a glance the orders or work in process and in what departments such orders are. This ledger will be found to serve an excellent check on the work in process at the close of the month and from it the cost accountant can readily see whether or not the total of work in process actually is anywhere near the book figure.

In closing let me say just another word on the question of obsolete stock. Obsolete parts are often left lying in stock with a value attached until the annual inventory when someone takes a notion to have them obsoleted. During the course of a year these obsolete parts often grow in number and by the end of the year total up quite a sizeable sum. To charge off these parts at the end of the year when they could have been charged off gradually as they become obsolete is a bad mistake for the amount or value of these parts has to be charged off in total and often comes as a shock to the management when by gradual charging off, each charge would be so small as to be hardly noticeable. Apart from that there is the question of space to be considered.

An Employee Shareholder Plan

(From the Toronto Globe, Sept 10, 1932)

A SYSTEM of industrial management calculated to bring about "the establishment of the Kingdom of God upon earth" was described to the Kiwanis Club of London, Ont., on Sept. 9th by ex-Mayor Duff Slemin, Brantford solicitor.

This description of it is not Mr. Slemin's, but that of Rev. Captain Jeakins, now of London, and formerly of Brantford, who at the close of Mr. Slemin's address, said he had seen and admired it in operation in the plant of S. C. Johnson Manufacturing Company, where it originated.

It is not "socialistic," Mr. Slemin said, but "socialogical," and incorporates in a harmonious whole employee ownership, guarantee of steady work at good wages through the level production plan, and protection against unfair dismissal because of the supervision of an appeal board composed of employees.

Many Benefits Enjoyed

The employees enjoy also the benefit of group insurance, recreational facilities, including tennis courts, special transport conveniences, and with it all the company's steady dividends.

Incidentally, Toronto came within an ace of having the plant for herself. In 1920, L. M. Croft, who had been with the Johnson Wax Company in Racine, Wis., and who had spent a period as the company's representative in England, decided to put his industrial ideas into operation. To this end he decided to establish a plant in Cana-

AN EMPLOYEE SHAREHOLDER PLAN

da. He was on a train, bound for Toronto, when he met an unnamed Brantford Alderman, who learning his purpose, persuaded him to stop off there instead. Brantford thus secured the new industry, which was launched in 1920 with a Dominion charter and a capital structure featured by all common stock and no bond issues.

Mr. Croft, a man of Irish ancestry, American birth, and now Canadian by choice, had the support of his former chief, S. C. Johnson, a wealthy philanthropist, who furnished the means for launching the Canadian factory. Favorable results were encountered from the start, and in its first year the company paid off its obligations from its earnings.

The employees were told that there was no desire to exploit them, but it was suggested to them that they should buy stock in the company. The company financed their purchases through the bank, and their commitments rested easily on them because their wages were above the average. Wages were held to the highest level the business could stand, and the stock is now largely held by the sixty men and women who work for the company. Then a club charter was drawn up, featuring a plan to have the employees manage the business. It was not a matter of fads or frills, said Mr. Slemin, and he described as remarkable what has been accomplished.

Probation System

The employees' association is named "J.F.L.A.," meaning Johnson's First, Last, Always. A new employee is on six months' probation to determine whether he has the spirit of the place and he if should be admitted to permanent membership, but when he secures permanent placing he is guaranteed fifty weeks' work a year at top wages, plus two weeks' holidays with pay.

The discipline of the plant is handled entirely by a committee of employees, whose decisions are passed on to the management. How this co-operation works out was shown by Mr. Slemin in one instance. He said that Mr. Croft felt it necessary to dismiss a worker for serious cause. The worker appealed to the committee. The committee felt that the man had erred and recommended as a penalty a cut in pay, but continuance at work. The man redeemed his position, and is now one of the most valuable on the Johnson staff.

The basis of the guaranteed employment feature is a survey made to estimate the year's production. Instead of having a rush to capacity period and then a slack period, the production is levelled off over the twelve months and all are kept steadily at work.

"The plant has been amazingly successful," said Mr. Slemin. "From 1920 the company has maintained its entire staff in steady employment. It would be a mistake to say that it has not felt the depression, but it is likewise true that the extra effort of the entire Johnson organization has made it possible to maintain business on such a high standard.

Mr. Slemin commented on the splendid spirit of co-operation, which he attributed to unselfishness on both sides. Last year, he said, the employees, with full knowledge of the company's records, came to the management and said: "We have been treated so well in prosperity that we are ready to have you deal with our wages now according to the needs of the company."

Unemployment Fear Absent

"It is remarkable," he said, "that you can create such an attitude and produce such results even in times like these. This arrangement cannot properly be called socialistic; it is socialogical. Mr. Croft could have controlled this business for himself, but his unselfishness

COST AND MANAGEMENT

prompted the other course. Fear of unemployment and what may happen to their wives and families has been banished from the minds of the Johnson workers. You may say: 'It is all right for that business, but not for mine.' We are not here to urge the plan upon anybody further than to say that after our experience in Brantford we know that it is a method worthy to be emulated. Here is an ordinary business. The plan is in practical operation. The business is successful. The whole organization is permeated with confidence, born of the deep interest from both sides. The employees own their own homes. They have the guarantee of full employment at good wages. There has been a transformation not only in their outlook, but even in their personal appearance. As solicitor for the Johnson Company I have had an intimate view of the plan in operation. To do it involves sacrifice, undoubtedly, but when accomplished it stands as a great expression of unselfishness."

LONDON LIFE CREATES PLANNING DEPARTMENT

Announcement has been made of the creation, out of the former planning division of the London Life, of a planning department, under the direction of D. M. Stevenson as department secretary. The personnel of the new department will be built up gradually as qualified members of the staff can be made available.

The planning department will be concerned with aiding in improving the efficiency of all sections of the work of the office. This will be done by systematic study of operations, equipment and layout within the departments and by research.

EXAMINATION RESULTS

The following are the results of the examination held this year in Montreal, by The Montreal Board of Trade in conjunction with our Society:

First Examination in Cost Accounting, 12 candidates, those successful with their marks, being:

J. I. Bernier 85; M. H. Doig 83; J. D. Hannen 80; L. Viau 77; A. Racicot 72; D. Cornell 71; A. J. Wood 66; E. A. Landermann 65; J. K. Johnson 60. M. H. Bacon passed a supplementary examination with a mark of 68.

Second Examination in Cost Accounting, Thesis on a Cost System, and Business Organization and Administration, four candidates those successful with their marks being:

	Cost Accounting	Thesis	Business Organization & Administration
D. Peddie	85	97	85
J. K. MacLean	95	85	87
Jas. Heughan	92	80	81

DIRECTORS' MEETING IN TORONTO AND HAMILTON

A meeting of directors of the Society was held in Toronto on Monday, Sept. 19th, after the Toronto Chapter dinner. Apart from routine business, the board favorably considered the purchase of uniform badges for members of all Chapters. In view of uncertainty as to revenue for the current year, it was felt that no change in the proportion of fees allowed to Chapters could be made at present. The board discussed at length the question of primary education in cost

DIRECTORS' MEETING IN TORONTO AND HAMILTON

accounting, and possible steps which our Society might take to enable junior cost clerks to obtain suitable training.

The meeting adjourned to continue in Hamilton on Sept. 21st, but golf interfered on that date, as, in view of the threatening weather, the board deemed it advisable to proceed with the game at once.

The following directors were present: H. E. Guilfoyle, T. S. Jardine, A. E. Keen, W. M. Lane, E. C. MacPhee, K. A. Mapp, A. J. Mouncey, G. M. Mulholland, L. T. Peto, P. E. F. Smith, J. W. Spence, and Jas. Turner.

PERSONAL ITEMS

A. F. Riddell, C.A., of Riddell, Stead, Graham & Hutchinson, died on September 24. Mr. Riddell was born in Aberdeen, Scotland, in 1853, coming to Canada with his father in 1864. After living at Kingston, Ont., for some years, he entered the Merchants Bank of Canada, later leaving to enter accounting work with his father.

D. R. Patton, C.A., Montreal, has moved his office to 256 Notre Dame St. West.

H. K. S. Hemming, B.A., C.G.A., C.P.A., of Montreal has moved to Charlottetown, P.E.I., his office now being located in the Bank of Nova Scotia building there.

A. C. Woolley has been transferred from General Motors Truck & Coach of Canada, Ltd., Hamilton, to General Motors Products of Canada, Ltd., Toronto.

A. E. Keen, C.A., of Hamilton, has severed his connection with Thorne, Mulholland, Howson & McPherson, and has opened his own office in Hamilton at 6 James St. South.

G. E. F. Smith, C.A., of Hamilton, has severed his connection with the firm of Richardson, Smith, Ferrie & Co., and has opened his own office in Hamilton at 6 James St. South.

R. V. Kirkby, secretary-treasurer of our Vancouver Chapter for the past two years, has left Associated Dairies, Ltd., and is now the financial and insurance firm of Geo. L. Schetky, Ltd., at 626 Pender St. West.

S. J. Gadsby, of Toronto, attended the recent meeting of the Controllers' Institute of America, held in New York.

THE TREND OF PRODUCTION COSTS

Commodity prices, as measured by the Dominion Bureau of Statistics index number which is based on the year 1926, advanced slightly from 66.6 in July to 66.8 in August. The following is a comparison by main groups:

	Aug. 1931	July 1932	Aug. 1932
Foods, beverages & tobacco	68.6	60.9	61.1
Other consumers' goods	79.2	78.5	78.6
All consumers' goods	75.0	71.5	71.6
Producers' equipment	88.8	88.1	88.1
Building & construction materials	81.2	75.9	75.7
Manufacturers' materials	59.5	56.5	57.0
All producers' materials	63.4	60.0	60.4
All producers' goods	65.9	62.8	63.2
All commodities	70.5	66.6	66.8

The principal declines in August were in the following: Dried fruits, vegetables, scrap iron. The principal advances in August were in: Hides & skins, fats, eggs, raw cotton, raw wool and raw silk.

CHAPTER NOTES

TORONTO

The date of Toronto's opening meeting—September 19th—caught some of the members still on vacation, nevertheless there were about sixty members and their friends present, and the evening was one of the most enjoyable yet held in Toronto, partly by reason of Mr. Peto's well-considered and well-delivered address, and partly because of the excellent quality of the entertainment.

Mr. L. A. Peto, vice-president and comptroller of Canadian Car & Foundry Company, Ltd., and president of our Society this year, spoke on "The Problems and Opportunities of Business." His message was one of optimism and at the same time a recommendation of hard work as the best solution.

Mrs. Vaughan Glaser and company provided the excellent singing and acting talent, successful in every way except in that it failed to embarrass the particular members of the audience against whom the salutes were directed. The Chapter is highly indebted to Mrs. Glaser for the evening's contributions and can certainly endorse the quality of the entertainment which her company offers.

Toronto Chapter opens this season with its membership roll in excellent shape, a number of new members having already replaced the few which dropped out during the summer.

CENTRAL ONTARIO

About twenty members and friends attended the opening meeting of Central Ontario Chapter held at the Walper Hotel, Kitchener, on September 20th. The hotel provided an excellent dinner at a modest price. The speaker of the evening was Mr. L. A. Peto, of Montreal, president our our Society, and vice-president and comptroller of Canadian Car & Foundry Company, Ltd., his subject being "The Problems and Opportunities of Business". Mr. Peto took the view that low buying power, rather than over-production, was the main cause of the depression, and that when buying power was restored there would be a good volume of business. His illustrations and comments on costing principles were of special interest.

The Chapter executive, with the co-operation of Mr. McKague, the general secretary, is planning for a number of meetings this season, some of them to be held jointly with Hamilton Chapter, which has kindly agreed to extend its friendly assistance this season. These meetings will be announced to the members from time to time.

VANCOUVER

VANCOUVER

Directors of Vancouver Chapter held a meeting on Sept. 12th, and elected the following officers for the current year: Chairman, G. R. Baird, Associated Dairies, Ltd.; vice-chairman, G. S. McGlashan, British Columbia Sugar Refining Co., Ltd.; secretary-treasurer, M. Willis, Union Oil Company of Canada, Ltd.

Arrangements were also made for an opening meeting of the season on September 24th, in the form of a social afternoon at the home of W. Griffiths, C.A. Plans are being made for an active season in the Chapter.

COST ACCOUNTING AT MONTREAL CITY HALL

(From The Montreal Gazette, August 6, 1932)

Installation of a new cost accounting system for the municipal workshops and garage is to be one of the first results from the financial survey and audit now under way at the City Hall.

Complaints voiced in the City Council Thursday as to charges for equipment on day labor held to be excessive have had their echo already before the Executive Committee, in connection with consideration of the auditors' progress report. From what the experts can see, more precise cost accounting is perhaps one of the urgent needs of the city's financial departments, so that the authorities may know more surely where they are going in doing work under city supervision.

The auditors are to make suggestions as to the installation promising best results, and the aldermen are ready to put those suggestions into effect without delay as soon as the details are before them.

Study of day-labor costs as compared with contract work costs will open next week before the Executive. There seems to be slight chance of day labor being adopted as a general principle, however, for figures supplied already by some of the department heads covering a number of years demonstrate that in some instances the difference between day labor and contract work is 40 per cent, in favor of the private contractor. Nevertheless, the administration will make a real study, and predictions were made yesterday that the ensuing report will be ample to settle once and for all a controversy which has raised its head practically during every City Hall regime, but which is more than ever to the fore with the situation existing.

In connection with the decision of the Executive and of the Council that hand shovel cannot replace steam shovel where local works, such as sewers, paving or sidewalks are at the charge of fronting properties, it was emphasized yesterday at the City Hall that, as a general principle, the city is abandoning the steam shovel in all works paid for at large, such as relief works. It is only where 20 or 30 per cent. more in taxes would fall upon a few people fronting on a street that the proprietors themselves will be allowed the choice.

"Now, I want Albert to have a thoroughly modern and up-to-date education," said his mother, "including Latin."

"Yes, of course," said the headmaster, "though Latin is, as you know, a dead language."

"Well, all the better, Albert's going to be an undertaker."

REFERENCE LITERATURE

RECEIVED IN SEPTEMBER

DEPRECIATION, Methods of. The Accountant, Sept. 17.
Gain-Sharing Principles, Simple Application of. R. E. Jacke.
N.A.C.A. Bulletin, Sept. 15.

Time-Study and its Relation to the Piece-Rate Method of Wage Payment. C. O. Rainey. N.A.C.A. Bulletin, Sept. 15.

Community Organization, Accounting for Block. C. E. O'Neil.
N.A.C.A. Bulletin, Sept. 1.

Depreciation Reconsidered. S. W. Rowland. Accountants Journal, September.

Income Tax, What Practical Reforms are Necessary in Connection with Wear and Tear Allowances for Purposes of. Accountants Journal, September.

Office Equipment, Modern. A. E. Angus. Accountants Journal, September.

Statistics in Business, Use of. J. C. Cameron, M. Com. Canadian Chartered Accountant, September.

Taxicab Accounting Procedure and Control. L. J. Farrell. American Accountant, September.

Foreign Profit and Loss Items, Practical Treatment of. H. W. Sweeney. American Accountant, September.

Accountancy, Untaken Salients in. W. E. Dickerson and J. W. Jones. American Accountant, September.

Retail Trade Accounting. L. G. MacPherson. Certified Public Accountant, September.

Purchasing, Engineers. Cost Accountant, August.

Farm Cost Accounts for Local Authorities. Cost Accountant, August.

Cottonseed Products Industry. R. C. Clark. Journal of Accountancy, September.

Real Estate, Instalment Sales of. W. Mucklow. Journal of Accountancy, September.

Tire Industry, Automobile. L. Park. Journal of Accountancy, September.

THE LAW OF BUSINESS ACCOUNTING

"Elements of the Law of Business Accounting" by A. A. Berle, Jr., and Frederick S. Fisher, Jr., is a reprint of an article which appeared in the Columbia Law Review, and is published by the Columbia Law Review at \$1 per copy. It examines the items of a financial statement from the legal viewpoint, referring extensively to legal decisions on the meaning of the items and what should be included in them. Both the balance sheet and the profit and loss statement are dealt with, also adjustment accounts and consolidated statements.

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